

# Accessing Real Time Canadian Radar Data

FY 2005 Proposal to the NOAA HPCC Program

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Principal Investigator: **Kevin Kelleher**

Line Organization: OAR

Routing Code: R/NS

Address:

National Severe Storms Laboratory (NSSL)  
1313 Halley Circle  
Norman, OK 73069

Phone: (405) 366-0423

Fax: (405-366-0572

E-mail Address: [Kevin.Kelleher@noaa.gov](mailto:Kevin.Kelleher@noaa.gov)

Other Investigator 1

Steve Del Greco

NDCD, Ashville, N.C.

Steve.DelGreco@noaa.gov

Other Investigator 2

Steve Vasiloff

NSSL, Norman, OK

[Steve.vasiloff@noaa.gov](mailto:Steve.vasiloff@noaa.gov)

Other Investigator 3

Proposal Theme: **Technology Transfer**

Funding Summary:

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Kevin Kelleher  
Deputy Director, CIO  
NSSL

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James F. Kimpel  
Director  
NSSL

# **Accessing Real Time Canadian Radar Data**

Proposal for FY 2005 HPCC Funding

Prepared by: Kevin Kelleher

## **Executive Summary:**

We propose to make available Canadian weather radar data in real time to NCDC for archival and dissemination to the researchers within the U.S., universities, and the private sector.

This multi-line office project leverages the previously funded and highly successful HPCC demonstration project called Collaborative Radar Acquisition and Field Test (CRAFT). In February 2003, the NWS announced plans to extend CRAFT nationwide with the deployment of a real time delivery system for 132 U.S. WSR-88D radars using the NGI/Abilene network as its backbone. The deployment was recently completed and this project was awarded the 2004 NOAA Technology Transfer Award.

## **Problem Statement:**

Certain research efforts rely on using high-resolution Doppler radar data. For example, the most successful applications that estimate precipitation, often referred to as Quantitative Precipitation Estimation (QPE), use WSR-88D Level II radar data as the core data set, usually mixed with other data such as satellite, lightning, or model data. With the entire National Weather Service radar network transmitting data in real time, research groups are using the data to provide estimates of precipitation for important uses such as flash flood forecasts and warnings (see previously funded 2002 HPCC proposal "Utilizing the NOAA NGI Infrastructure to Improve Flash Flood Warnings"). In addition, the Great Lakes Environmental Research Laboratory (GLERL) issues Lake level forecasts. However, the U.S. radars only cover a portion of the Great Lakes, an area encompassing many highly populated cities. By accessing Canadian weather radar data and transmitting it over the Internet in real time, researchers could, for example, improve QPE estimates for forecasting Lake levels for transportation, nutrient runoff into the Great Lakes, and help build a longer term Lake climatology.

## **Proposed Solution:**

Working with NESDIS's National Climatic Data Center (NCDC), we propose to implement a CRAFT-like approach to the Canadian radar data and transmit the data over the Internet/I2 to NCDC for dissemination in real time to government and university researchers, as well as the private sector for operations.

The major activities include working with NCDC and the Canadian Weather Service to obtain a sample of their radar data, determining how the data are formatted, determining how best to

transmit these data via the Internet to NCDC, and determining how NCDC should make the data available for general use.

### **Analysis:**

NCDC has already secured a bi-lateral agreement with the Canadians to mutually share weather radar data at no cost. NCDC and NSSL have the background and expertise needed to implement a CRAFT-like approach to transmit the data using, for example, UNIDATA's Local Data Management (LDM) software. Other approaches will be considered to transmit the data to NCDC if it is not feasible to use LDM. Simple FTP scripts can be used, depending upon how the Canadians want to proceed. The benefits of either approach are the low cost and speed needed to deliver the data in real time (LDM) or near-real time (FTP).

### **Performance Measures:**

The project's success will be measured by making the data available from NCDC to the U.S. government and university researchers and private sector users within a minute of the time the data are available from the Canadian Weather Service.

### **Milestones**

- Month 01 – Obtain a sample of the radar data from a Canadian weather radar.
- Month 03 – Perform format conversions of the data to emulate U.S. radars
- Month 05 – Implement a CRAFT-like scheme for transmitting the Canadian radar data to NCDC in real time/near real time
- Month 07 – Make the Canadian weather radar data available from NCDC in real time/near real time
- Month 09 – Obtain data from several Canadian weather radar stations located around the Great Lakes and have NCDC disseminate and archive the data

### **Deliverables**

The final deliverable will be distribution of Canadian weather radar data over the Internet/I2 from several Canadian radars (as many as they will provide to us, perhaps as many as 5 to 8) within 10 months of receiving funding.